

A COMPREHENSIVE APPROACH TO HEALTH AND SAFETY 2000



HEALTH AND SAFETY DEPARTMENT



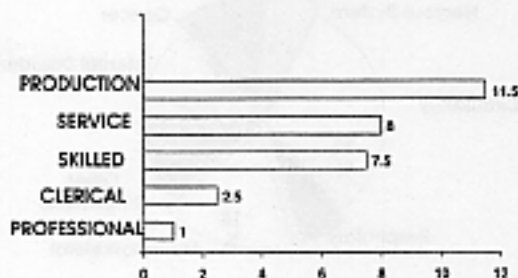
Recent Experience:

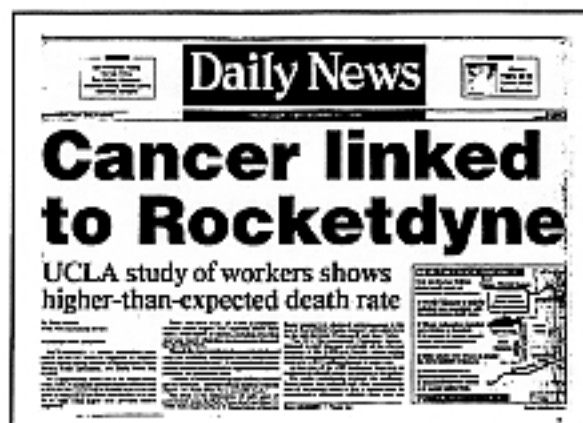
- 9 deaths from acute injuries in UAW bargaining units in 1999
- 8/9 skilled trades workers
- 6 auto company workers, all skilled trades
- 2 spin off workers
- 43 victims from 1996-1999
- 21 victims were skilled trades workers
- Contractor deaths not reported

Toll Of Injury And Illness Among UAW Members (1998):

- 24% recordable injury/illness
- 10.4% Lost Workday injury/illness
- 7.1% Repeated Trauma Disorders
- > 1% of worktime lost due to injury/illness
- True rate for RTD's is above 10%
- Short onset chemical illnesses (for example, respiratory problems) still undercounted
- Chronic illnesses (cancer, silicosis) known from research but not included in statistics

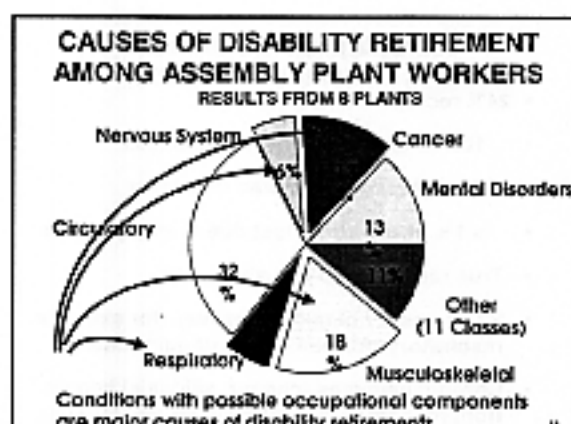
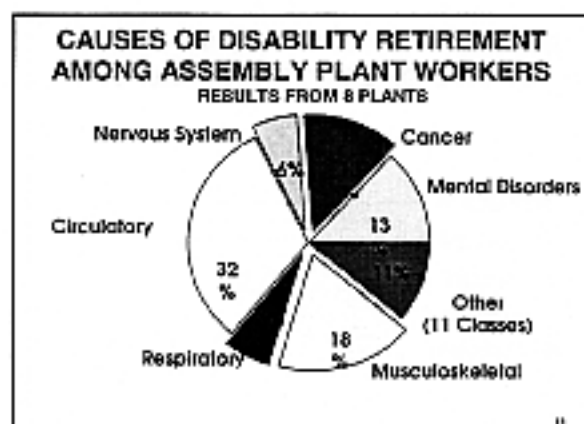
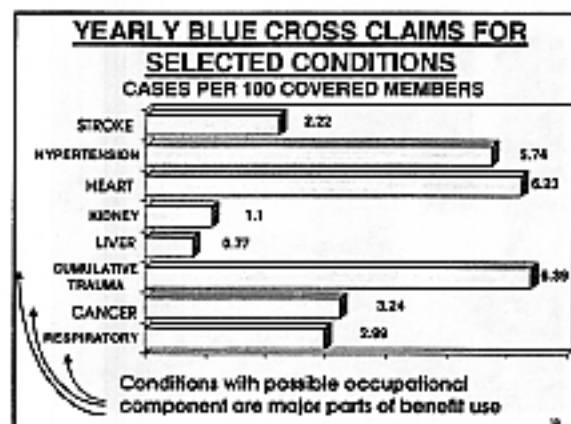
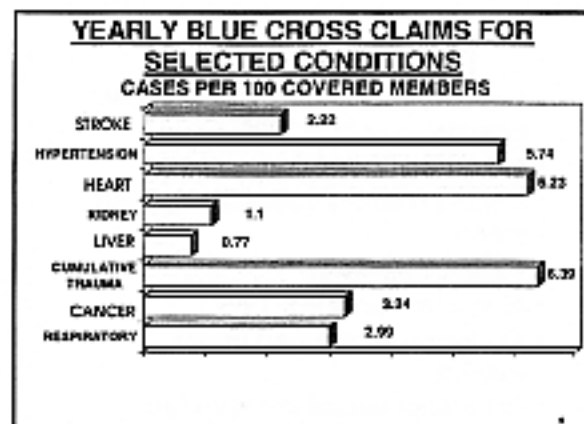
RELATIVE RISK OF DISABLING INJURY BY TYPE OF OCCUPATION CLASS





Many Indications of Problems beyond the Official BLS Statistics:

- Health Insurance Claims
- Disability Retirements
- Sickness and Accident Insurance Claims
- Research



Identified problem areas:

- Fatal or severe acute injuries
- Injuries and illnesses generally
- Repeated trauma disorders
- Short onset chemical effects
- Chronic disease from chemical exposure
- High risk service sector exposures
- Work environment

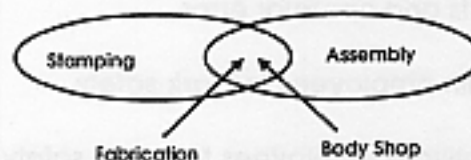
Job assignment groups have different spectrum of risks:

- Skilled Trades
 (maintenance, repair, installation, service)
- Mechanical Material Handling
 (powered industrial trucks, cranes)
- Other support
 (cleaners, production service)
- FIXED PRODUCTION
- Service Sector
- Clerical and Technical

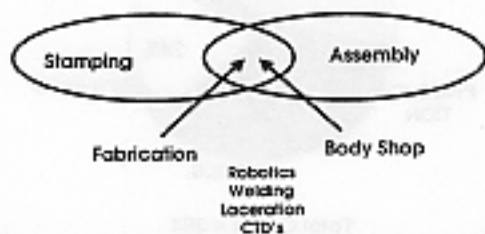
Process Types Have Characteristic Spectrum of Risks:

- Assembly -- Car, Light Truck
- Stamping
- Machining -- Engine, Transmission, Other
- Foundry -- Iron, Aluminum
- Parts Mfg-- Electrical, Fuel System, other
- Hard Trim -- metal, plastic, plastic body
- Soft Trim -- Interior, plastic exterior
- Heavy Truck, Ag Imp, Aerospace
- Parts Depots
- Other

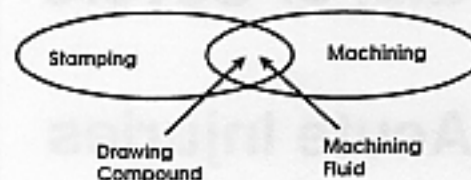
Hazards and Job Assignments Both Overlap and Contrast:



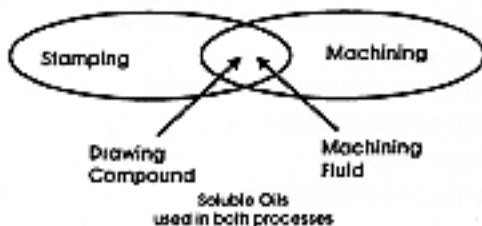
Hazards and Job Assignments Both Overlap and Contrast:



Chemical Exposures Both Overlap and Contrast:



Chemical Exposures Both Overlap and Contrast:



JOB HAZARD MATRIX

Job Group:	Skilled Trades	Mechanical Material Handling	Other Support	Fixed Production	Tech. Office Prof.
Outcome:					
Severe Acute Trauma					
Injury Generally					
CTD's					
Short Onset Chemical					
Chronic Disease from Chemicals					
High Risk Service					

Historical approach to health and safety:

- Adverse affects caused by unsafe acts and operator error
- Train employees to work safely
- Motivate employees to follow safety rules

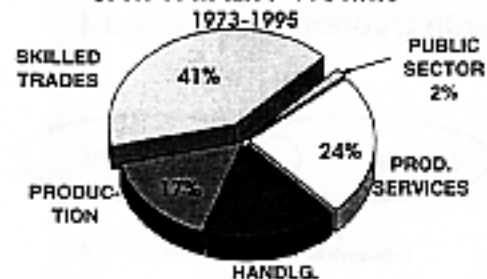
Systems approach to health and safety:

- Adverse effects are caused by physical environment and production system
- Fix the process which produces injuries and illnesses
- Train employees to recognize hazards and system failures
- Motivate employees to participate in hazard identification and abatement

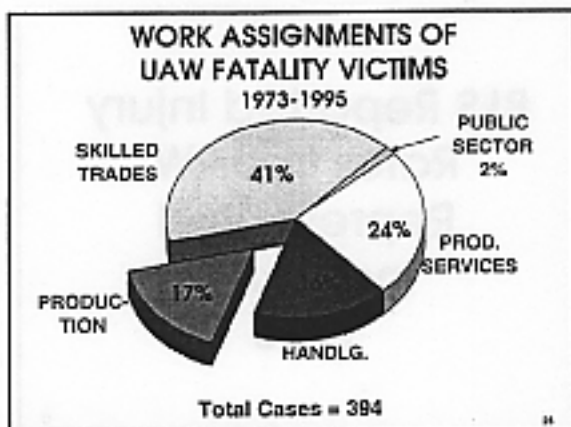
PROBLEM AREA:

Fatal or Severe Acute Injuries

WORK ASSIGNMENTS OF UAW FATALITY VICTIMS 1973-1995

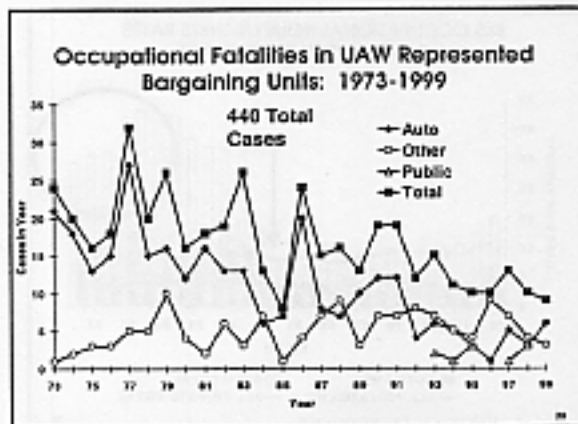
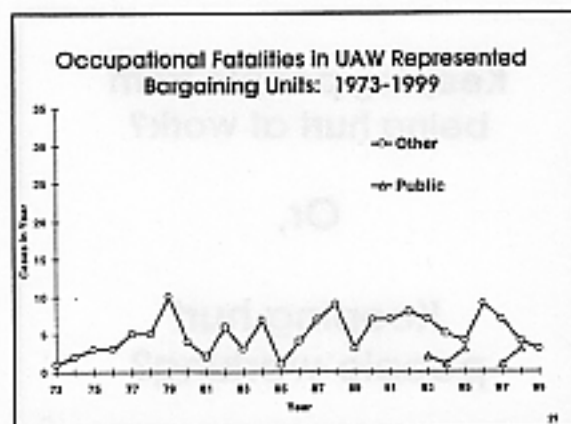
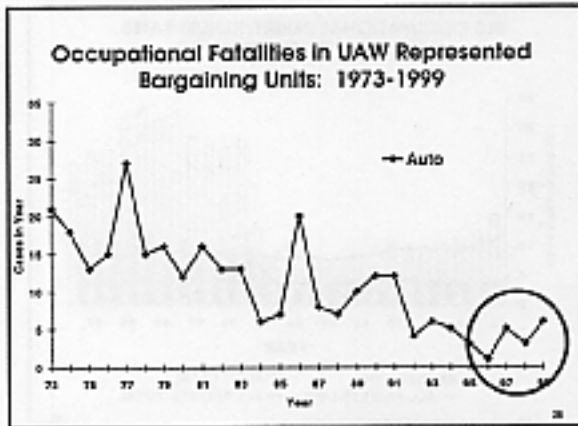
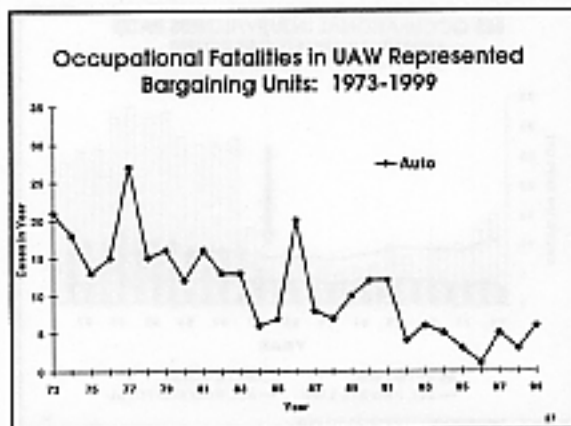


Total Cases = 394



**SOLUTIONS:
 FATAL AND SEVERE ACUTE INJURIES**

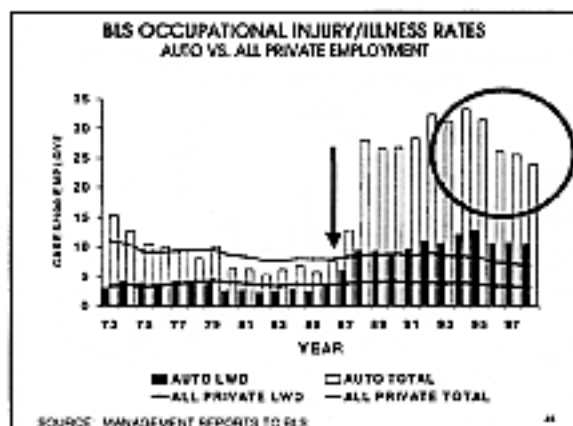
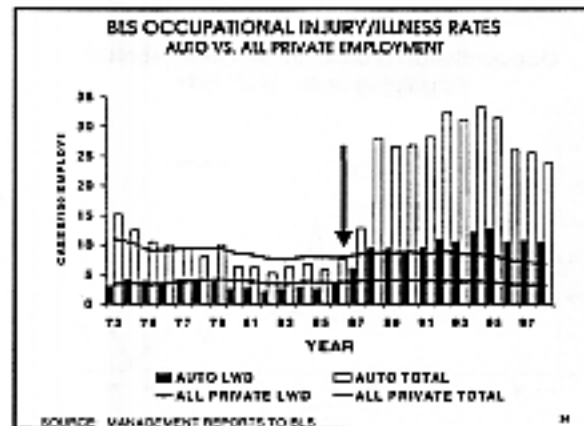
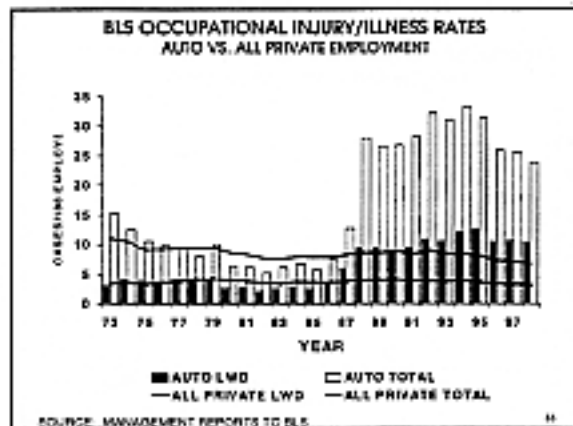
- ENERGY LOCKOUT -- Machine Guarding
- FALL PREVENTION
- MATERIAL HANDLING VEHICLES
- CRANES
- RIGGING
- RELEVANT OSHA STANDARDS:
 Hazardous Energy (1910.147)
 Material Handling Vehicles (1910.178)
 Cranes (1910.179); Machine Guarding



PROBLEM AREA:

Injuries Generally

BLS Reported Injury Rates in UAW Represented Industries 1998

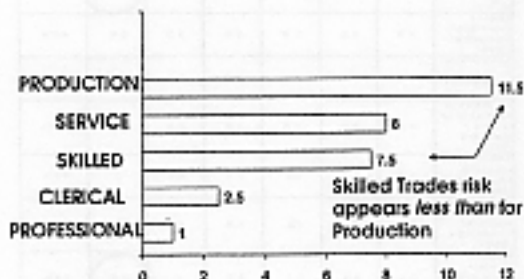


**Keeping people from
 being hurt at work?**

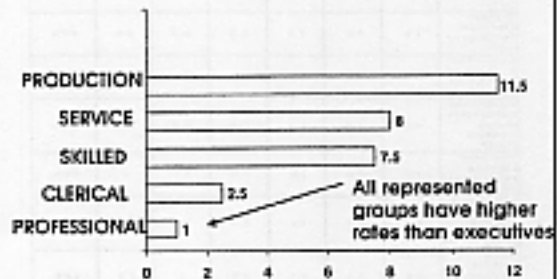
Or,

**Keeping hurt
 people working?**

RELATIVE RISK OF DISABLING INJURY BY TYPE OF OCCUPATION CLASS



RELATIVE RISK OF DISABLING INJURY BY TYPE OF OCCUPATION CLASS



Solutions:

Injuries Generally:

- "Traditional" OSHA Compliance
- "Traditional" Job Safety Analysis
- Machine Guarding
- PPE -- gloves, glasses and shoes
- Walking and working surfaces
- Aisles and housekeeping
- Electrical code
- Fire prevention

PROBLEM AREA:

Repeated Trauma Disorders - Musculoskeletal Disorders

Injuries can be grouped for by diagnosis and cause by probable methods for prevention:

Category	Specific Diagnosis	Causes
Forceful Contact	Fractures Cuts, Punctures Bruises Amputations	Struck by Struck against Caught in Fall to lower level Fall same level Slip or trip w/o fall Fire or explosion
Musculo-skeletal	Sprains/Strains Carpal Tunnel Syn. Tendinitis Back pain and Pain	Overexertion Repetitive Motion
Exposure	Heat Burns Chemical Burns Illnesses not CTD	Exposure to substance or environment
Other	Multiple Injuries Stress Disorders Other	Psychosocial Stress Violence, Traffic Other

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A Comprehensive Approach to Health and Safety
UAW Health and Safety Department
January, 2000

Reduction in CTD Rates in Key UAW Industries, '94-98

INDUSTRY	'93	'94	'95	'96	'97	'98	Percent Change '94-'98
MOTOR VEHICLE AND EQUIPMENT (3711)	6.3	5.6	5.3	7.1	7.4	7.1	28%
Electric, Electronic and Other Equipment (3600)	2.9	4.8	3.9	3.8	3.3	2.0	43%
Automotive and Transportation Equipment (3720)	3.7	3.8	3.8	3.3	2.6	2.8	24%
Transportation Equipment and Parts (4000)	4.2	3.6	3.9	3.8	3.0	2.0	51%
Transportation Equipment (4000)	1.7	3.6	na	3.8	4.1	3	44%
Automotive and Transportation Equipment (3720)	2.2	3.5	na	2.4	na	na	na
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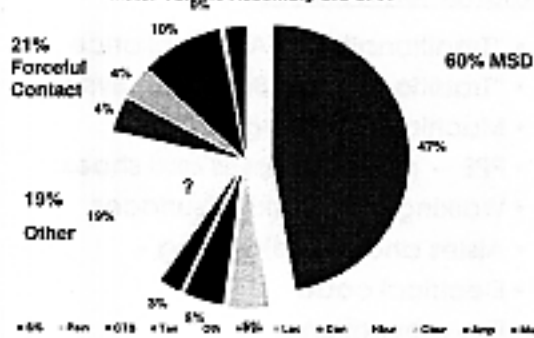
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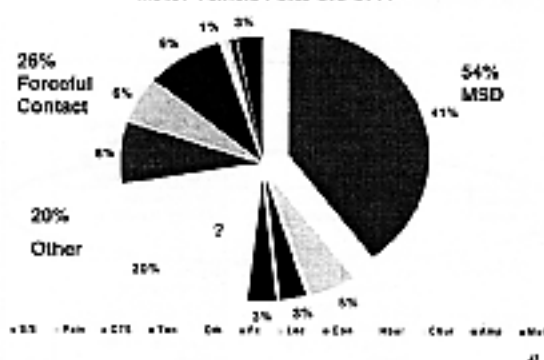
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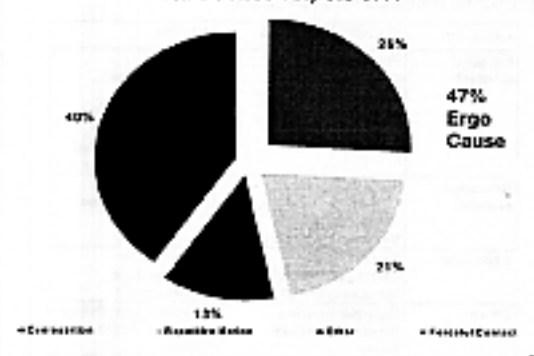
**Proportional Injury Ratios by Type
Motor Vehicle Assembly SIC 3711**

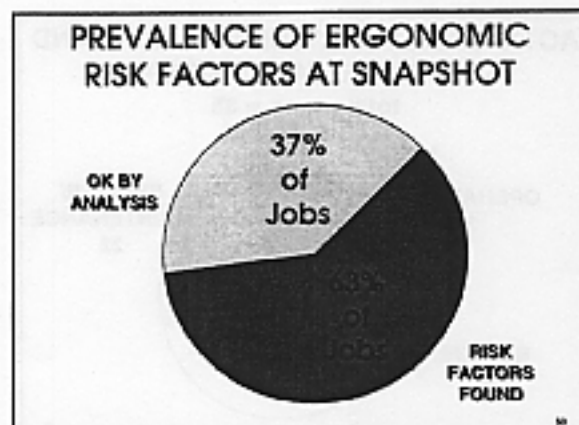
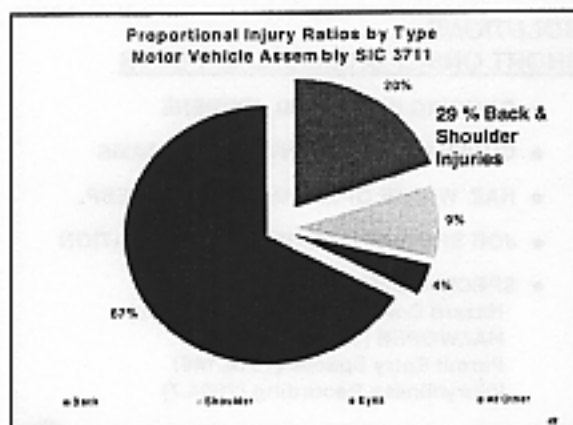


**Proportional Injury Ratios by Type
Motor Vehicle Parts SIC 3714**



**Proportional Injury Ratios by Type
Motor Vehicle Assembly SIC 3711**





SOLUTIONS:

INJURIES AND ILLNESSES GENERALLY

- INJURY/ILLNESS ANALYSIS
- ERGONOMICS PROGRAMS
- JOB SAFETY (AND HEALTH) ANALYSIS
- RELEVANT OSHA STANDARDS
 - Injury/Illness Recording (1904.7)
 - General Duty Clause (Section 5(a)1)
 - Detailed settlement agreements

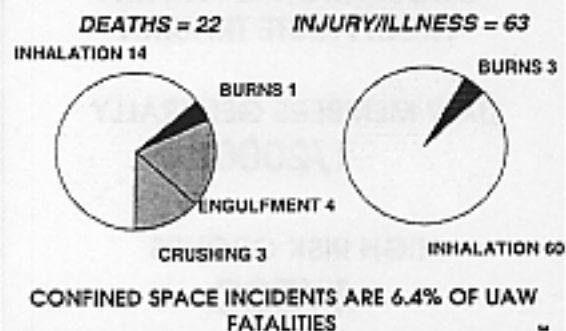
Fundamental solution:

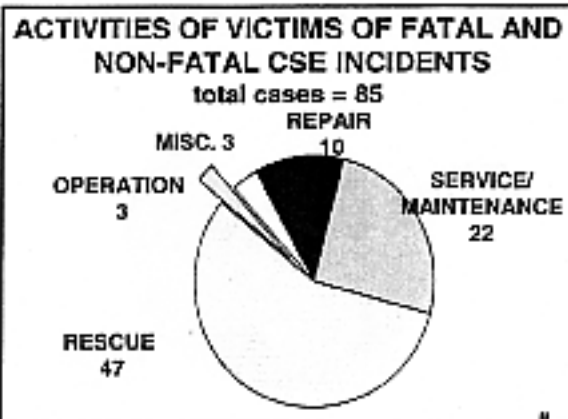
- Design for production:
 - includes product as well as production system
- Ergonomic risk factors eliminated
- Employees who do the work participate in identifying hazards and solutions

PROBLEM AREA:

Short Onset
Chemical Exposure
Effects

CONFINED SPACE ENTRY HAZARDS
EXAMPLE OF SHORT ONSET CHEMICAL EFFECTS





SOLUTIONS:
SHORT ONSET CHEMICAL EFFECTS

- ONGOING INDUSTRIAL HYGIENE
- CONFINED SPACE ENTRY PROGRAMS
- HAZ. WASTE OPER. AND EMERG. RESP.
- JOB SPECIFIC HAZARD COMMUNICATION
- SPECIFIC OSHA STANDARDS:
 Hazard Communication (1910.1200)
 HAZWOPER (1910.120)
 Permit Entry Spaces (1910.146)
 Injury/Illness Recording (1904.7)

Fundamental solution:

- Eliminate or reduce sources of non-routine exposure:
 no confined areas
 clean without solvents
 no spills, leaks, upsets
- Select less toxic chemicals

PROBLEM AREA:

Chronic Disease

From Long Term

Chemical Exposure

**LIFETIME RISK OF
 OCCUPATIONAL FATALITY
 FROM ACUTE TRAUMA**

UAW MEMBERS GENERALLY
1/2000

HIGH RISK GROUPS
1/500

**LIFETIME RISK OF
 OCCUPATIONAL CANCER**

Estimate based on 5% of
 Cancer due to
 Occupational Exposures

1/100

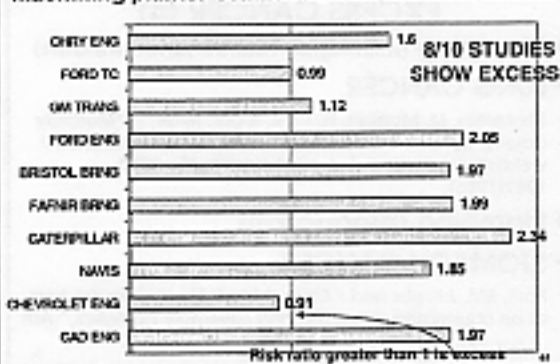
COMPARATIVE RISK

- Cancer risks are 5 to 20 times greater than traumatic fatality risk; but
- Risks found from research are usually not completely certain; and
- *Illnesses found were from exposures or levels previously thought safe!*

INTERPRETING RESEARCH RESULTS

- Research doesn't "create" a problem: research documents causes of cases already there
- Associations with exposures create opportunities for prevention in the future, even if the past effects can't be cured.

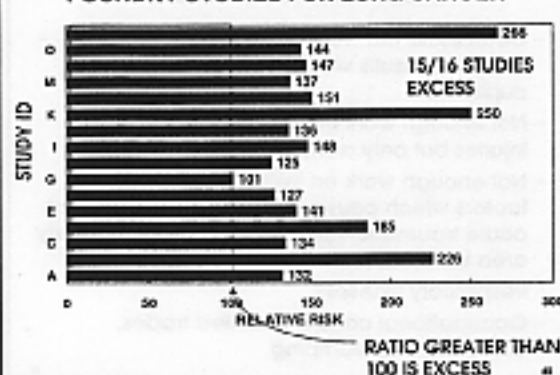
Mortality findings in UAW- represented machining plants: relative risk for stomach cancer



Respiratory Illness in Machining Operations:

- Occupational asthma
- Cross Shift Pulmonary Function Drop
- Irritation
- Hypersensitivity Pneumonitis

FOUNDRY STUDIES FOR LUNG CANCER



Respiratory Illness in Foundry Workers:

- Increased mortality from respiratory causes
- X-ray change
- Obstructive pulmonary function changes
- Respiratory Symptoms -- Occupational Bronchitis

ADDITIONAL STUDIES FINDING EXCESS CANCER (1)

- Pattern and Model Makers
- COLORECTAL CANCER
- Robinson, C, et al, "Pattern and modelmakers: Proportionate Mortality," *Am J Ind Med*, 1:59-165(1980)
- Swanson G. and S. Belle, "Cancer morbidity among woodworkers in the US automotive industry," *J. Occup. Med*, 24: 315-319(1982)
- Swanson, et al, "Colon cancer incidence among modelmakers in the automobile manufacturing industry," *J. Occ. Med*, 22: 567-569(1985)

ADDITIONAL STUDIES FINDING EXCESS CANCER (2)

- Plating and Die Cast (Hardware)
- LUNG CANCER
- Silverstein, M., F.E. Mirer, D. Koteichuck, B. Silverstein and M. Bennett, "Mortality among workers in a die cast and electroplating plant," *Scav. J. Work, Environment and Health*, 2: 156-165(1981)
- Electronics
- BRAIN CANCER
- Park, RM, Silverstein, MA, Green, MA, Mirer, FE, "Brain cancer mortality at a manufacturer of aerospace electromechanical systems," *Am J Ind Med*, 17: 537-552(1990)

ADDITIONAL STUDIES FINDING EXCESS CANCER (3)

- Assembly
- LUNG CANCER, BLOOD FORMING SYSTEM?
- Chiazze, L et al, "Mortality among automobile assembly workers: I. Spray Painters," *J. Occup. Med*, 22:520-526(1980); II. White Males," *J. Occup. Med*, 26:215-221(1984)
- Park, RM, J Krebs and F Mirer, " Mortality among workers at an automotive stamping and assembly complex," *Am J. Ind. Med*, 26: 449-463(1994)

ADDITIONAL STUDIES FINDING EXCESS CANCER (4)

- Stamping (millwrights, maintenance welders)
- LUNG CANCER
- Silverstein, M, Matlish, N, Park, R and Mirer, F, "Mortality among workers exposed to coal tar pitch volatiles and welding emissions," *Am J Pub Health*, 75: 1283-1287(1985)
- Stamping (production)
- STOMACH CANCER
- Park, RM, J Krebs and F Mirer, " Mortality among workers at an automotive stamping and assembly complex," *Am J. Ind. Med*, 26: 449-463(1994)

SOLUTIONS: CHRONIC DISEASE FROM CHEMICAL EXPOSURE

- LOWERED EXPOSURE LIMITS
- ONGOING INDUSTRIAL HYGIENE
- CONTINUATION OF OCCUPATIONAL HEALTH RESEARCH
- VENTILATION/PROCESS IMPROVEMENTS
- RELEVANT OSHA STANDARDS:
 Hazard Communication (1910.1200)
 Access to Medical and Exposure Rec (1910.20)

Future Research Needs:

- Coordinate the work in all three companies -
- confirm results where needed but don't duplicate
- Not enough work in ergonomics -- half the injuries but only a small number of projects
- Not enough work on injury prevention -- factors which cause and methods to prevent acute traumatic injury is the health and safety area with the least scientific work.
- Respiratory illnesses
- Occupational cancer in skilled trades, assembly and stamping

Present State of Industrial Hygiene:

- Everything is < 1/10 the PEL
- Symptoms complaints in many operations
- Serious health risks from prevailing exposures based on recent research
- Most IH unproductive or focused on specifications: Hazcom, Hazwoper, Asbestos/lead abatement, IAQ

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Fix the PEL's and Go Back to Work:

- Sulfuric Acid
- Synthetic Mineral Fibers
- CO
- Metalworking Fluids
- Aliphatic petroleum solvents
- Silica
- Welding fume

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Radical Revision:

- Adopt a health based approach to all particles aimed at 0.1 mg/M3 based on general respiratory mortality and morbidity
- Adopt a health based approach to all non organ toxic solvents aimed at 10 ppm based on reproductive toxicity

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PROBLEM AREA:

High Risk Service Sector Activities

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HIGH RISK SERVICE SECTOR ISSUES

- Official statistics show injury rates in service sector are as high as manufacturing and construction
- Health care sector has highest injury rates
- Growing sector of economy and union movement needs attention

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HIGH RISK SERVICE SECTOR ISSUES

- Health Care Workers
Airborne TB and Other
Infectious Exposures
Chemicals
High Injury Rate
- Public Service Workers:
Client Violence

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Solutions:

High Risk Service Sector Exposures

- Infection Control Procedures
- Ergonomics – lifting methods
- Laboratory Industrial Hygiene
- For health care workers, most health and safety improvements also improve patient care
- Violence Prevention Plan
- For social services and corrections, staffing levels and other changes also improve the service to clients

PROBLEM AREA:

Work Environment

WORK ENVIRONMENT ISSUES

- Apply to both blue collar and TOP settings
- Contract protections reduce job insecurity and stress
- “Office Ergonomics” = static posture, high repetition-low force activities
- VDT
- Indoor Air Quality

SOLUTIONS:

Work Environment Issues

- Ergonomic solutions for particular job assignments
- Proper equipment and work load allocations
- General air ventilation design and maintenance
- Job Stress reduction

JOB HAZARD MATRIX

Job Group:	Skilled Trades	Mechanical Material Handling	Other Support	Fixed Production	Tech. Office Prof.
Severe Acute Trauma	☆	☆			
Injury Generally					
CTD's					
Short Onset Chemical					
Chronic Disease from Chemicals					
High Risk Service					

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CTD's					
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Chronic Disease from Chemicals					
High Risk Service					

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Injury Generally				☆	
CTD's				☆	☆
Short Onset Chemical					
Chronic Disease from Chemicals					
High Risk Service					

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JOB HAZARD MATRIX

Job Group:	Skilled Trades	Mechanical Material Handling	Other Support	Fixed Production	Tech. Office Prof.
Outcome:					
Severe Acute Trauma	☆	☆			
Injury Generally				☆	
CTD's				☆	☆
Short Onset Chemical	☆		☆		
Chronic Disease from Chemicals	☆			☆	
High Risk Service					

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Severe Acute Trauma	☆	☆			
Injury Generally				☆	
CTD's				☆	☆
Short Onset Chemical	☆		☆		
Chronic Disease from Chemicals	☆			☆	
High Risk Service			☆		☆

19

History of Collective Bargaining Gains (1):

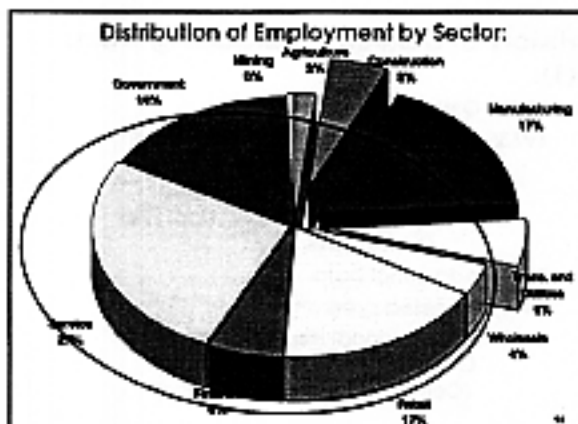
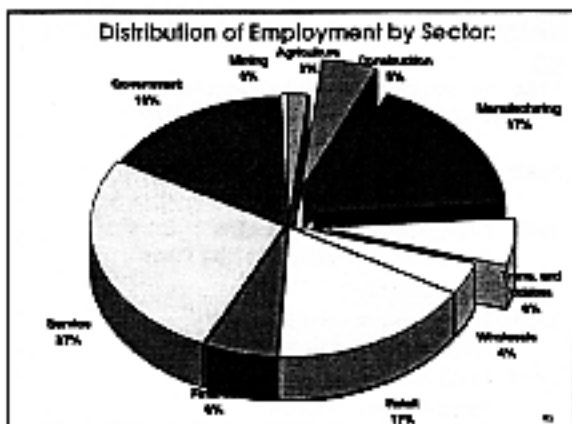
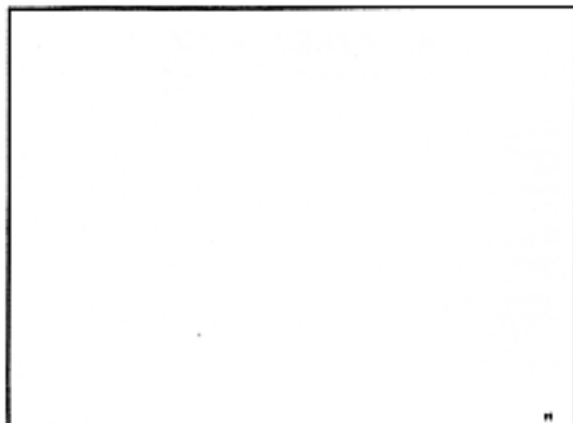
- 1970: OSHA Act Passed
- 1973: Health and Safety Representative Rights to Investigate
National Joint H&S Committee
Annual Joint Training of Local H&S Committees
- 1976: Additional Data
- 1979: Targeted programs
- 1982: Occupational Health Advisory Bd.
Commitment to Joint Training
(Cents per Hour Training Fund)

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History of Collective Bargaining Gains (2):

- 1984: Health and Safety Training Fund
Health and Safety Research Fund
Joint Centers Established
- 1987: Ergonomics Implementation
Targeted programs
- 1990: Full Ergonomics Programs
Expanded numbers of H&S Reps
Joint Audits
- 1993: Expanded Energy Lockout
Environmental provisions
- 1996: Additional Ergonomics
Plant Review Boards

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A Comprehensive Approach to Health and Safety
UAW Health and Safety Department
January, 2000

